R-1C NOTICE OF VIOLATION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

FILE COPY

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

October 26, 1988

J. Victor Congdon
Manager of Plant Engineering
International Fuel Cells
195 Governers Highway
South Windsor, CT 06101

RE: **NOTICE OF VIOLATION** of Federal Hazardous Waste Management Regulations; 3002(a)(1) and 3004(a)(1), (a)(6), (d)(1), (e)(1) and (g)(5) of the Resource Conservation and Recovery Act, 42 U.S.C. §§6922(a)(1) and §§6924(a)(1), (a)(6), (d)(1), (e)(1) and (g)(5).

Dear Mr. Congdon:

On August 4, 1988, representatives of the U.S. Environmental Protection Agency conducted an inspection at International Fuel Cells (IFC), EPA ID# CTD065536062. The purpose of this inspection was to determine the facility's compliance with federal hazardous waste management regulations, including the Land Disposal Restrictions (LDR) Rule. The LDR Rule applies to facilities that manage certain spent solvents after November 8, 1986, "California list" wastes after July 8, 1987, and "first third" wastes after August 8, 1988. Among other things, the Rule requires these facilities to treat their wastes to specific treatment standards prior to land disposal. (The "California list" wastes are liquid hazardous wastes containing certain metals, PCBs, and cyanides and/or which have a pH $\leq$ 2, and liquid and non-liquid hazardous wastes containing halogenated organic compounds.) The LDR Rule also establishes other requirements set forth in 40 CFR Part 268 as well as in the revised regulations of 40 CFR Parts 260-265 and 270. (See 51 Federal Register 40572 (November 7, 1986); 52 Federal Register 21010 (June 4, 1987); and 52 Federal Register 25760 (July 8, 1987)).

As a result of the inspection, we have determined that your facility violated certain federal hazardous waste management regulations. The specific violations were noted as the following:

1. 40 CFR §262.11(b)

   Failure to determine the correct category of a hazardous waste generated at the facility. The IFC waste stream #3011, containing waste perchloroethylene (F003) was incorrectly classified as D001 waste.

CONCURRENCES

2. 40 CFR §265.15(d)

Failure to maintain adequate inspection log, including date and time of inspection and inspectors name. The security guard inspection tape does not constitute an adequate inspection log.

3. 40 CFR §265.15(b)

Failure to develop an adequate inspection schedule. The inspections conducted in the waste management area failed to check levels of fluids in the sump pits and to check for adequate aisle space in that area.

4. 40 CFR §265.16(d)

Failure to maintain the job title for each position at the facility related to hazardous waste management and to maintain the name of the employee filling each job A position description specifically describing the responsibilities related to hazardous waste management of each employee was not maintained.

5. 40 CFR §265.13

Failure to update facility's waste analysis plan to include procedures necessary for compliance with the land disposal restrictions.

6. 40 CFR §268.7(a)(1)

Failure to make the required notification for materials restricted under the "land ban" regulations. Prior to May 12, 1988, the facility was not making the required land disposal restrictions notification. Specifically, notification was not made for periodic shipments (approximately 1-2 times per year) of waste solvents sent to Pratt & Whitney's E. Hartford facility.

7. 40 CFR §268.7(a)

Failure to evaluate all wastes at the facility to determine if that waste is restricted from land disposal. The facility has not looked at each waste stream to determine the applicability of the land disposal restrictions. Specifically it was noted that the IFC waste stream #3011 is incorrectly classified as D001 waste.

You are hereby required to:

1. Immediately upon receipt of this **NOTICE**:

    a. Provide the appropriate LDR notification with each shipment of restricted waste made to off-site treatment, storage or disposal facilities, as required by 40 CFR Part 268.7(a)(1).

2. Within thirty (30) calendar days of receipt of this **NOTICE**:

    a. Submit to EPA a written description, with supporting documentation, of the actions taken to correct the aforementioned violations, and;

    b. Submit to EPA a written description of how IFC will comply with the notification requirements of 40 CFR Part 268.7(a)(1) and include a sample of the type of notification which will be sent to treatment, storage, and disposal facilities where restricted wastes are sent. IFC shall hereafter continue to provide such notifications for each shipment of restricted wastes made to any treatment, storage, or disposal facilities.

Failure to correct the violations as required by this **NOTICE** may subject the facility to further Federal enforcement action, including the assessment of penalties, pursuant to Section 3008 of RCRA, 42 U.S.C. §6928. If you have any questions regarding this **NOTICE**, please contact Mr. George Olson of my staff at (617) 573-9683.

Sincerely,

Gerard Sotolongo, Chief
CT Compliance and Enforcement Section

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION I

RCRA INSPECTION REPORT

DATE: October 26, 1988

SUBJ: International Fuel Cells, South Windsor, CT, Inspection on August 5, 1988

FROM: George Olson, Chemical Engineer
Arthur Wing, Environmental Engineer

TO: Gerard Sotolongo, Chief
CT Compliance and Enforcement Section

I. General Information

A. Facility Name

International Fuel Cells
195 Governers Highway
South Windsor, CT 06101

B. RCRA Contact: Joseph Congdon, Manager of Plant Enginering

C. Responsible Official: Joseph Congdon

D. Date of Inspection: August 5, 1988

E. Purpose of Inspection: Compliance Evaluation Inspection

F. Persons Participating in the Inspection:

i. Arthur Wing and George Olson
CT Compliance and Enforcement Section
U.S. EPA Region I

ii. Joseph Congdon, Manager, Plant Engineering
Robert W. Francis, Environmental Manager
Neil A. Hasset, Counsel
International Fuel Cells

II. RCRA Reporting/Information Requirements:

* Facility I.D. Number: CTD010166791
* Type of Operation: Generator/TSDF
* Type of Notification: Generator/TSDF
* Date of Notification: 10/09/80
* Date of Part A submittal: 11/26/80
* The facility intends to submit a Part B application.

III. Source Description

International Fuel Cells (IFC) is located in an industrial park/rural setting in South Windsor, CT. The facility was established under its present name at the site in 1964.

IFC manufactures fuel cell power plants and conducts research and development in areas related to fuel cell technology. Two types of fuel cell technology are utilized in production at the facility. A third type, using a molten carbonate electrolyte, is in the research phase. Fuels cells for commercial use are manufactured using an acid electrolyte. IFC also manufactures fuel cells for use in the Space Shuttle that utilize a base electrolyte.

Processes at the facility include the manufacturing of the graphite electrodes for use in the fuel cells, coating the electrodes with electrolytic materials and stacking the coated electrodes in the fuel cell assembly. Sheet metal fabrication and general machine shop activities also occur on site. Electronics testing and testing of the fuel cells are also performed at the facility. Laboratory research and small scale production using a molten carbonate electrolyte is also conducted at the facility.

The graphite base part of the electrode manufacturing process generates some waste graphite, but no hazardous waste. However, one of the components of the graphite substrate manufacture is a phenolic resin. Occasionally a bad batch of resin is encountered and is handled as a hazardous waste. As part of the electrode manufacturing process, a noble metal and acid/base (depending on the type of electrolyte used) is applied to the graphite substrate. Scrap pieces of the coated electrode that are generated during production are handled as hazardous waste. Also, some waste acid and base is produced from the manufacturing process. It should be noted that the facility accepts spent fuel cells and has attempted to recycle or treat the waste electrodes in them.

The research and testing labs at the facility generate wastes that are lab packed for disposal. The molten carbonate research area produces noble metal waste that is managed as a saleable product. Also, some bulk solvents are generated in this lab.

The facility has a cooling water system that utilizes an ethylene glycol water mixture. At infrequent intervals waste water/ethylene glycol solution is produced and is managed as a hazardous waste.

The sheet metal shop at the facility uses a vapor degreaser. According to Mr. Francis, waste 1,1,1-trichloroethane (TCA) is generated approximately once per year. The waste TCA is sent for reclamation at Pratt and Whitney's East Hartford facility.

PCB containing waste was generated at the facility at one time and is still being stored on site. According to Mr. Francis, the concentration of PCB's in the waste was probably less than 500 ppm.

IV. General Observations:

The facility inspection consisted of a tour of the production, testing, research and waste management areas of the property, and a review of the facility's waste management records.

Tour:

The facility tour began with an inspection of the production areas for the different types of fuel cells. Waste acid and base is produced in the cell filling areas. The waste is accumulated in containers at the filling areas, and then brought in five gallon bulk containers to the hazardous waste storage area. Any waste pure graphite (before acid/base or noble metal is added) is landfilled. Pieces that have already been coated are placed in plastic lined 55 gallon barrels. The facility hopes to treat the acid and noble metal containing plates on site by nuetralizing the acid. The plates that are then pure graphite will be landfilled, while the graphite pieces that contain noble metals will be sent for reclamation. At the time of the inspection, the material was being stored outside of the drum storage area in 55 gallon drums.

The sheet metal shop at the facility uses a vapor degreaser for miscellaneous parts cleaning. According to Mr. Congdon and Mr. Francis, approximately once per year

the unit is emptied of 1,1,1-Trichloroethane, which is sent to Pratt and Whitney's East Hartford facility for reclamation. According to the Mr. Francis and Mr. Congdon, no other waste solvents are produced in this area.

As part of the power plant production (i.e. integrating the fuel cell with fuel systems and transformers, etc.,.) the facility assembles a fuel reformer that utilizes a nickel catalyst. Any nickel dust that is generated from the production of the reformer is sold for reclamation.

The molten carbonate research and fabrication area produced waste in several areas. Nickel dust waste is produced but is treated as a saleable product. There were three drums in the area containing nickel waste. Two of the drums contained solid nickel waste, while the third contained a nickel/water slurry. Neither waste was treated as hazardous waste. None of these three drums were labeled nor were the tops of the drums sealed. A fourth drum labeled as containing hazardous waste was also in the molten carbonate area. The drum was labeled as containing D001 waste. According to a list with the drum, it contained perchloroethylene, ethanol, isobutanol and fish oil. According to IFC's waste stream classification, this drum should not have been used for the disposal of waste perchloroethylene. Also, the drum was incorrectly labeled as D001 waste and should have been labeled either F002 or F003. The drum was not full and was labeled with a start date of 05/27/88.

The hazardous waste storage area was located at the rear of the property, separate from the main building, approximately fifty feet from a fence marking the property boundary. It should be noted that the facility leases the property which is located in Shepard Industrial Park. The facility is located on part of a larger piece of property that is all under one ownership.

There were two entrances to the waste storage building, both of which are usually kept locked. Both entrances had signs reading "Danger - Unauthorized Personnel Keep Out". The floor of the storage building was concrete, and has four separate bermed areas. There also four floor drains, each connected to a 375 gallon sump tank.

The first bermed area contained a 375 gallon tank holding corrosive waste, classified as D002. The tank was labeled as hazardous waste. The accumulation start date on the tank was 02/20/88.

The second bermed area held various raw materials as well as a one hundred pound container of Potassium Hydroxide solid. The container was labeled as hazardous waste and had an accumulation start date of 07/01/88.

The third bermed area contained three 55 gallon drums of hazardous waste. All three had hazardous waste labels. The first was labeled as waste solvent (F002) and had an accumulation start date of 01/08/88. The second was labeled as waste flammable liquid (D001) and was given the IFC designation of 3011 waste (consisting of acetone, ethanol, isobutanol and others). This waste was classified incorrectly as D001 and should have been labeled F003. The third drum was labeled as waste denatured alcohol (D001) and had an accumulation start date of 06/20/88. There was also one drum containing PCB waste (in oil) and a drum of waste oil in this bermed area. Two 150 pound fiber drums containing raw phenolic resin were also observed in this area. According to Mr. Francis, the drums would not be hazardous waste until they were transfered to other containers. He said that the material could still be usable until that time.

The fourth bermed area contained one 2300 gallon waste acid liquid tank. The tank had a hazardous waste label on it, and an accumulation start date of 02/01/88. The tank contained approximately 1000 gallons.

Five fiber drums of asbestos were also observed in the hazardous waste storage area.

A telephone with emergency numbers posted next to it was located in the storage area. Spill control equipment was available in the immediate area and a fire extinguisher was located outside the door of the building. The inspection tag on the extinguisher was current.

An area behind and beside the hazardous waste storage building had been enclosed by a fence, with the rear of the storage building making up one side of the enclosure. Approximately 10,000 pounds of pure graphite waste was stored in this area, as were other mscellaneos non-hazardous wastes. An acid collection tank was also located in this area. When the acid waste tank inside the storage building is to be emptied, the acid collection tank is pumped full from the storage tank and the waste acid is collected from this collection tank.

The drums of waste graphite containing acid and noble metal were observed outside of the drum storage area. There were fifty six 55 gallon drums containing graphite sheets that according to Mr. Congdon were coated with

acid and noble metal. Two more 55 gallon drums contained graphite coated with acid only. These fifty eight drums were labeled as containing phosphoric acid waste and had sealed tops. There were four other 55 gallon drums that were not sealed shut, three of which had no tops on them. These drums were labeled as containing phosphoric acid waste. There were also three other sealed drums that had no labels on them. According to Mr. Congdon these drums contained waste graphite coated with acid and noble metal. Mr. Congdon stated that these drums had been in that area for a few weeks.

According to Mr. Congdon there are five underground tanks for fuel storage at the facility.

Records Review:

IFC is listed as a generator and a storage facility. The facility has unsuccesfully attempted to treat graphite waste containing acid and noble metal in an elementary nuetralization process.The facility is currently looking into ways to sucessfully treat this waste on-site.

The facility's closure plan was available for review on the day of the inspection. The plan contained an estimate of the maximum inventory of waste ever onsite, an estimate of the total time required for closure and a certification that will be used when closure is completed. The plan did not have a description of the steps needed to decontaminate facility equipment nor did it have a schedule of the steps involved in closure. An estimate of ninety days was provided in the plan as the total time necessary for closure. According to the facility contacts, the plan is currently under review and will be included in the facility's permit application that will probably be submitted in the November of 1988. A closure cost estimate was maintained. The cost estimate was for $8550. and had been updated in January of 1988.

An operating record for the facility was maintained on site. All waste is shipped off-site and each drum is tracked until it is removed from the facility. Copies of any waste analysis results were requested and Mr. Francis said that the facility will send them. Waste analysis results for the phenol waste that is generated in the graphite production process were available. A waste analysis plan is maintained on site. The plan includes sampling methods and specifies that whenever new or unknown wastes are handled they should be tested. Parameters and test methods for specific wastes were not

included in the plan. A general waste analysis data sheet was included in the plan that gave some testing parameters.

According to Mr. Francis and Mr. Congdon, the contingency plan had never been implemented. According to Mr. Congdon and Mr. Francis, the security staff at the facility conducts daily inspections of the drum storage area. There is a written inspection schedule. However, the inspection schedule does not specifically address adequacy of aisle space or the presence/level of any liquid in the sump pits. Mr. Condon and Mr. Francis said that the only inspection logs that are maintained are the security guard's check-in tickets, showing the time, date and the security guard's name who is conducting the inspection. According to Mr. Congdon and Mr. Francis, the security guard would make a written notification upon finding any problem in the hazardous waste management (or any other areas) of the facility. These security guard inspection logs were unavailable at the time of the inspection. The facility was requested to send a representative copy of the inspection logs, as well as copies of any notifications that had been made by the security guards concerning problems in the hazardous waste storage area. The inspection round tickets for the security guards wre reviewed and found to be inadequate. The logs did not list the inspectors name or date of inspection, nor did the log clearly state the time of the inspections.

Contingency Plan:

The facility had a contingency plan available on the day of the inspection. The plan had been sent to the local fire department and local authority arrangements were documented in the plan. The emergency plan covered spills, fires and explosions. An emergency coordinator is identified and a list of emergency equipment is provided. It was noted by the inspectors that emergency equipment existed in the hazardous waste drum storage area that was not listed in the contingency plan. The contingency plan also contained an evacuation plan.

Training:

Job titles and descriptions for Mr. Francis and Mr. Congdon were available. These were in the process of being updated when the inspection was conducted. Mr. Congdon's job title was being amneded to include Environmental Coordinator and Mr. Francis's job title

amended to include Environmental Manager. A list of all employees who had completed training was available. The latest training was in May of 1988. Both Mr. Francis and Mr. Congdon completed training in May of 1988. According to Mr. Francis and Mr. Congdon, the security guards who inspect the hazardous waste storage area have all received training, either in May of 1988 or in the previous training session in November of 1987. No specific job titles or detailed position descriptions were available for those security guards. However, the facility maintains a training list for all employees that identifies security guards by a code number, very briefly states their hazardous waste activity involvement (i.e. Spill Control) and whether or not they have succesfully completed training. It should be noted that although Mr. Francis and Mr. Congdon are the only two employees with job descriptions specifically related to hazardous waste management, neither person is listed as the prime emergency coordinator and neither person conducts the hazardous waste storage area inspections that are logged (in the records of the security guard rounds).

Manifests:

The manifests that were reviewed appeared to be in order, with TSD signed copies maintained along with the generator's own copy of the manifest.

Land Ban:

IFC generates waste restricted under the land ban regulations.

The facility's waste analysis plan had not been revised to cover the land ban requirements for classifying wastes. Although the facility was making the proper notification for some of wastes generated on-site, improper classification of some waste solvents as D001 prevented them from doing this in all cases. The wastes had been classified based on the facility's knowledge of the processes and the waste that is generated by them. It appeared that the facility had not looked at each waste stream specifically to check the applicability of the land disposal restriction regulations to each individual waste stream. Specifically, the drums of IFC designated 3011 waste were incorrectly classified as D001 waste. It appeared that all restricted wastes had been stored for less than one year.

The facility's degreasing unit located in the sheet metal shop area of the facility generates waste 1,1,1-trichlor-

oethane. From a review of the manifest records, approximately 4-5 drums of waste TCA are manifested approximately every six months. It appeared that no land disposal restriction notification was made for the waste TCA.

Lab packs containing restricted wastes are generated at the facility. Nineteen drums of lab pack wastes were shipped in May of 1988. According to Mr. Francis and Mr. Congdon, this is a fairly representative shipment. A review of the lab pack logs showed that restricted wastes were included in this shipment. Notification appeared to be made for all of the restricted wastes in the lab pack shipment.

The facility generates xylene and acetone (F003) waste. According to Mr. Congdon and Mr. Francis, this waste is occasionally mixed with F002 waste (PCE) in small quantities. This mixture is then handled as F002 waste.

The facility generates liquid hazardous waste having a pH of less than two, having mercury contents of greater than 20 mg/l. The waste appears to be adequately characterized based on the facility's knowledge of the waste. Approximately 74 pounds of waste mercury were manifested in June of 1988. It did not appear that notification was made for this waste.